

CLAIMS

1. A steering angle sensor that detects a rotational angle of a steering system whose steering is assisted by driving of an electric motor via a reduction mechanism so as to calculate a steering angle of steering wheels, comprising:

a sensor wheel operating simultaneously with rotation of a steering shaft; and

an absolute angle calculating means for calculating an absolute steering angle based on a steering angle signal from the sensor wheel;

wherein the sensor wheel includes a GMR element and a magnetizing portion arranged around the GMR element,

wherein the rotational angle is detected with two turns of the steering shaft being one cycle based on a change in resistance value of the GMR element obtained by changing a magnetic field direction according to rotation of the magnetizing portion.

2. The steering angle sensor according to claim 1, wherein the GMR element is composed of two GMR bridge circuits, and is arranged so that phases of output signals from the GMR bridge circuits shift by 90°.

3. The steering angle sensor according to claim 1,

further comprising:

a turning direction determining means for determining a turning direction of the steering shaft; and

a middle point specific value detecting means for storing a position of a middle point of the steering shaft and detecting a predetermined value near the middle point so as to calculate the absolute steering angle in an entire steering angle range based on the predetermined value.

4. The steering angle sensor according to claim 3, wherein the turning direction determining means can determine the steering angle with accuracy of at least 720°.